SITE ASSESSMENT REVIEW SUMMARY

HUBERT WHEELER STATE SCHOOL
5707 WILSON AVENUE
ST. LOUIS, MISSOURI

August 10, 1994

Site Description

The Hubert Wheeler State School is located at 5707 Wilson Avenue in St. Louis, Missouri, (See attached street guide). The site is located north of Wilson Road just south of Interstate 44, in a mixed commercial and residential area. The Deaconess Hospital, Executives Examination Facility is located adjacent to the site on the west. Residential areas are located east and south of the site.

During recent years, a black tar-like material, resembling coal tar, has occasionally oozed from the ground surface in the courtyard area, at the northwest corner of the subject site. The oozing reportedly occurred more frequently during warm periods of the year. The school placed asphalt paving over the courtyard area to minimize the problems associated with the tar-like material. However, the material continues to ooze through the asphalt in various locations. In addition, several years ago, school maintenance personnel installed a concrete walkway from the asphalt playground to the school. During excavation for the walkway, the black material was reportedly "flowing" at a depth of approximately 3 feet. At least one drum was also discovered during the excavation.

Historical Documents Review

The information obtained from the historical documents review indicates that between 1907 and 1959 the site and surrounding area was controlled by a succession of property owners including Laclede Fire Brick Manufacturing Company, Laclede-Christy Company, and the H. K. Porter Company. The property was sold to Ann S. Dattilo in 1959 who leased the property to H. K. Porter Company and Jablonlow-Kom Theaters until the property was sold in 1966 to a consortium of investors for the Hampton Industrial Park.

Building and occupancy permits indicate that between 1950 and 1967 office and warehouse facilities were constructed by St. Louis Coke and Foundry Supply and by M. W. Warren Coke Company. In addition, a warehouse facility constructed in 1960 for the St. Louis Coke and Foundry Supply was apparently used for the storage of V.M.P. Naptha.

Aerial photographs taken in 1960 and 1964 (attached) indicate the site was vacant with apparent landfilling operations occurring north and west of the site. Buildings and structures likely associated with the foundry and coke companies were located north of the site. By 1969, the site appeared abandoned, buildings previously located north of the site had been demolished and the landfilling operations appeared to have ceased.

SITE ASSESSMENT ACTIVITIES

August, 1993 Subsurface Assessment: Included the completion of 10 soil borings to an approximate depth of 10 feet in the vicinity of the asphalt courtyard area. Continuous soil samples were collected with a split-spoon continuous sampler. The soil samples were observed for visual staining and field-screened for the presence of volatile organics using a Photovac Microtip photoionization detector (PID). One soil sample from each boring was retained for analytical testing. Generally, the soil sample yielding the highest PID reading, or in the absence

of PID readings, the soil sample which exhibited visual oil staining or discoloration, was retained. The soil samples were analyzed for priority pollutants including metals, volatiles, semi-volatiles, pesticides and PCB's, total cyanide, and total phenol by EPA Methods 6000/7000, 8240, 8270, 8080, 9012, and 9066, respectively. In addition to the priority pollutant analyses, the soil sample collected from Boring B-8 was analyzed for TCLP Lead using EPA Method 1311/7421, and the soil samples obtained from borings placed in the apparent coal tar seeps (B-8 and B-9) were screened for the presence of Dioxin using SOW Method 880. See Tables 1 and 2 for a summary of analytical results.

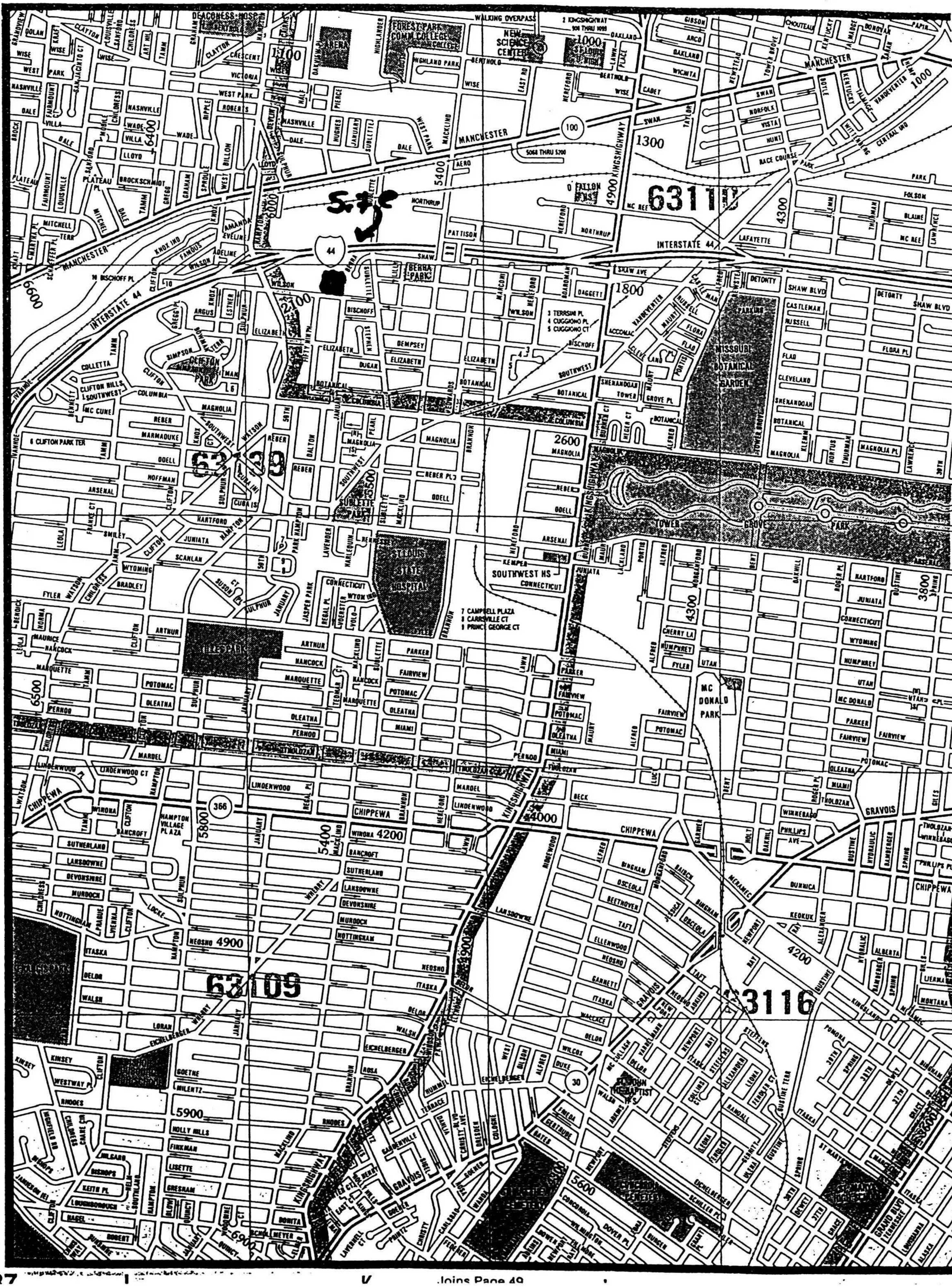
June, 1994 Magnetometer Gradiometer (MAG) Survey: The MAG technology is a passive geophysical technique which measures the earth's magnetic field. Metallic features of the surface and subsurface locally affect the magnetic field and produce anomalies, which are apparent when the measured field recorded by the instrument is plotted. The approximate location of each anomaly is plotted on a site map and potential drum burial locations are indicated. The magnetic field is affected by most types of metal and does not differentiate between them.

A 20-foot grid was established over the courtyard area using a level with vernier. Readings for both the total magnetic field and the magnetic gradient were taken at 10 foot spacings over the courtyard area. The magnetic gradient was plotted on a site plan to assist in identifying the locations of magnetic anomalies. (See Plate 1) The typical gradient response for a subsurface metallic feature is a high positive and associated low negative, with the probable location of the buried metal being between the two extreme values.

July, 1994 Surface Soil Composite Sampling: A total of ten surface soil (0 to 6-inches) composite samples were collected from the areas surrounding the asphalt playground area. The soil samples were submitted for analytical testing including total lead and semi-volatile organics using EPA Methods 6010 and 8270, respectively. See attached Table 3 for analytical results.

July, 1994 Infrared Thermographic (IR) and Ground Penetrating Radar (GPR) Surveys: The IR technology is used to map minute surface temperature differences caused by the differential adsorption of solar energy by surface and subsurface materials. Differences in surface and subsurface materials create an abnormal surface temperature profile making IR a viable technology for identifying subsurface voids, drums, underground storage tanks, and/or contaminated soil plumes. The limitation of IR is that it only sees the surface and can not give any indication as to the type of subsurface feature creating the anomaly or the depth of an anomaly. The GPR technology is a technique which can be used to further characterize anomalies identified by the IR technology. The GPR transmits electromagnetic pulses into the subsurface areas in question. The pulses are echoed back to a receiver which records the data. The data represents subsurface conditions and can be used to identify the approximate depth and size of the subsurface anomalies. The limitation of this technology is the negative effect clay has on its ability to conduct a signal.

The combined observations of the IR and GPR investigations resulted in the location of four suspected subsurface anomaly areas, as shown on the attached Plate 2.



21
22
Page 36
Joins
23
24
25

JANUARY 8, 1960

APRIL 20, 1969

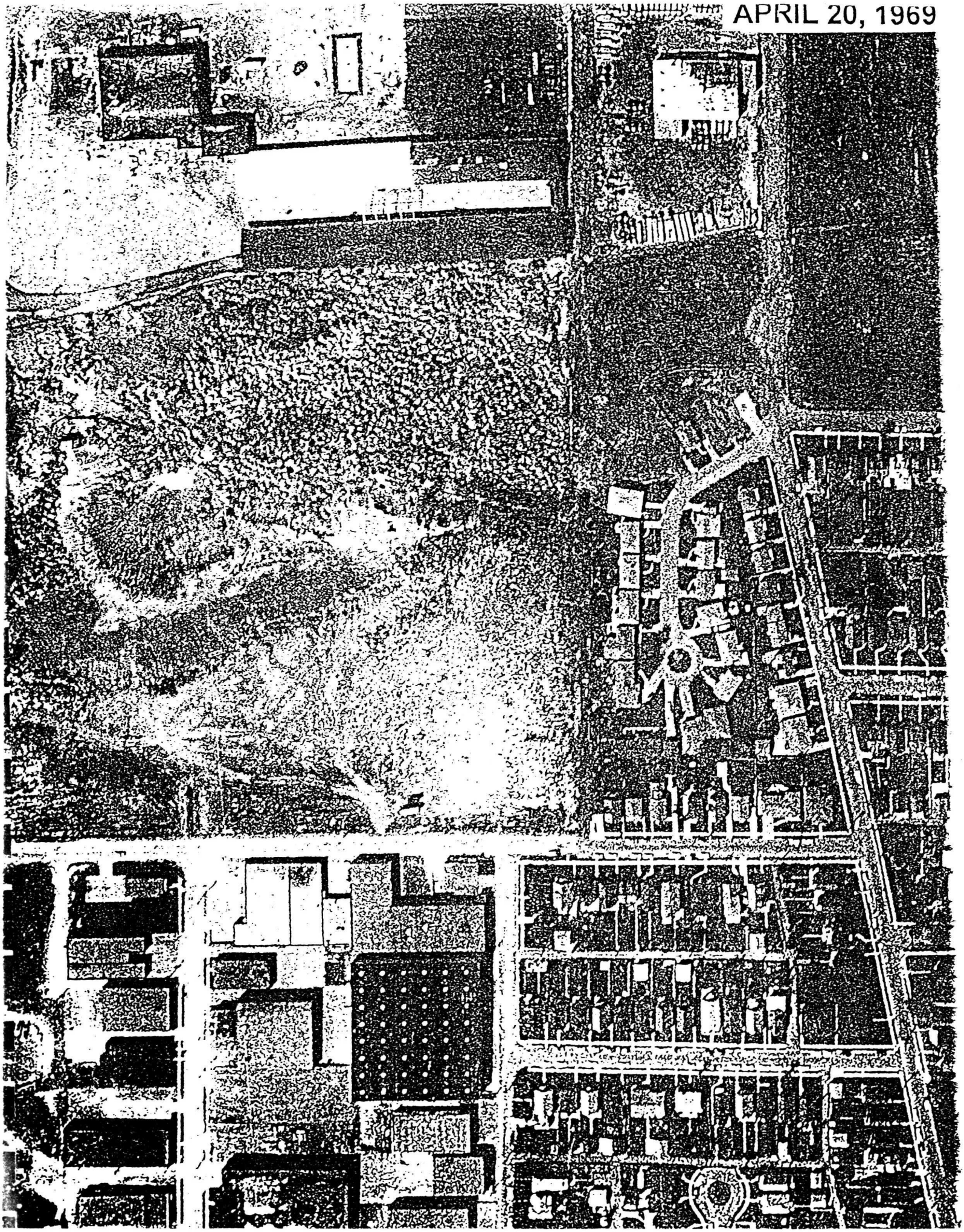


TABLE 1

ANALYTICAL RESULTS SUMMARY - METALS

METALS DETECTED	BORINGS (SAMPLE DEPTH FT.)									
	B-1 (3-7)	B-2 (8-10)	B-3 (3-5)	B-4 (6-8)	B-5 (1-4)	B-6 (3-5)	B-7 (6-8)	B-8 (1-3)	B-9 (7-9)	B-10 (1-3)
Arsenic	4.33	7.97	7.65	7.95	6.07	8.81	8.97	9.55	6.93	7.42
Beryllium	0.525	0.620	0.852	0.646	0.335	0.387	0.693	0.408	0.565	0.514
Cadmium	0.830	0.907	1.34	0.581	0.656	1.22	0.713	0.806	0.865	1.77
Chromium	14.9	18.9	13.7	21.0	12.2	62.2	18.6	12.0	13.2	9.62
Copper	17.6	29.4	35.5	13.3	9.68	54.5	15.3	13.9	20.2	13.3
Lead (total)	192	139	303	40.7	79.9	308	14.5	338	115	33.6
Lead (TCLP)	NA	NA	NA	NA	NA	NA	NA	0.123	NA	NA
Mercury	0.14	0.47	0.25	ND	0.26	0.63	ND	ND	0.11	0.39
Nickel	15.8	18.9	17.9	16.8	10.9	13.8	19.8	11.6	18.3	13.7
Selenium	ND	0.391	0.635	ND	ND	0.332	ND	0.520	0.530	ND
Silver	0.500	0.729	ND	0.586	ND	ND	ND	ND	0.720	0.986
Zinc	114	113	293	64.6	80.8	232	50.6	163	98.0	44.5

1 - Analtical Results are presented as Parts Per Million (mg/kg, mg/l)
NA - Parameter not analyzed
ND - Parameter not detected above the analytical detection limit

2498.01.3120.01

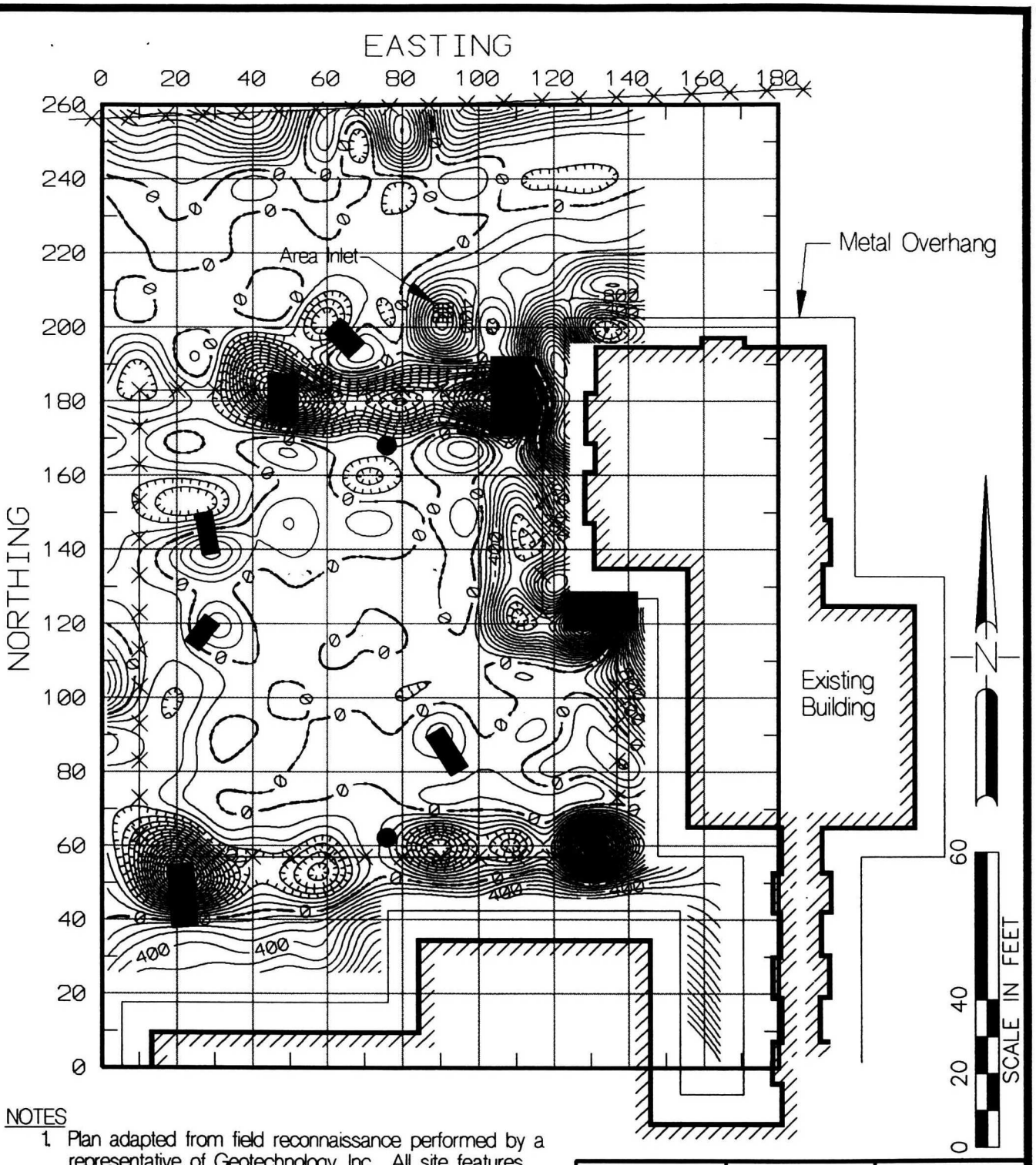
TABLE 2
ANALYTICAL RESULTS SUMMARY (Soil Borings)
SEMI-VOLATILE ORGANICS

SEMI-VOLATILE ORGANICS DETECTED	MDOH "ASL"	BORINGS Sample Depth (ft.)									
		B-1 (3-7)	B-2 (8-10)	B-3 (3-5)	B-4 (6-8)	B-5 (1-4)	B-6 (3-5)	B-7 (6-8)	B-8 (1-3)	B-9 (7-9)	B-10 (1-3)
2-methynaphthalene		.055	ND	ND	ND	0.160	ND	ND	.15	ND	2.4
Acenaphthyene		.072	ND	0.080	ND	0.71	ND	ND	.110	ND	1.4
Acenaphthlene		1.04	ND	0.150	ND	0.69	ND	ND	2.1	ND	8.2
Dibenzofuran		.610	ND	0.085	ND	0.44	ND	ND	1.2	ND	4.5
Flourene		1.3	ND	0.130	ND	0.57	ND	ND	2.3	ND	6.7
Phenanthrene		12.0	0.32	1.8	.120	6.1	33.0	ND	23.0	ND	83.0
Anthracene		2.9	ND	0.35	ND	1.2	7.2	ND	6.5	ND	16.0
Carbazole		1.4	ND	0.16	ND	0.82	ND	ND	3.0	ND	12.0
Di-n-butylphthalate		0.17	0.15	0.58	.081	ND	ND	ND	.068	ND	ND
Fluoranthene	2,300	13.0	0.31	2.4	.120	8.4	36.0	ND	28.0	ND	104.0
Pyrene	1,700	8.6	0.28	2.5	.106	6.4	35.0	ND	20.0	ND	93.0
Benzo(a)anthracene	0.44	5.0	0.13	1.2	ND	3.4	14.0	ND	12.0	ND	45.0
Chrysene	0.44	4.2	0.16	1.3	.056	3.3	15.0	ND	12.0	ND	54.0
Benzo(b)Fluoranthene	0.44	5.3	0.20	1.9	.089	5.2	16.0	ND	14.0	ND	62.0
Benzo(k)Fluoranthene	0.44	1.7	0.074	0.52	ND	0.45	7.0	ND	4.6	ND	29.0
Benzo(a)Pyrene	0.44	3.8	0.048	1.07	ND	3.0	13.0	ND	9.8	ND	41.0
Indeno(1,2,3-cd)pyrene		1.8	0.082	0.57	ND	1.4	5.5	ND	4.7	ND	18.0
Dibenzo(a,h)anthracene	0.44	0.46	ND	0.17	ND	0.42	ND	ND	1.4	ND	6.0
Benzo(g,h,i)perylene		1.6	0.077	0.56	ND	1.4	5.1	ND	4.3	ND	18.0
Naphthalene		ND	ND	ND	0.26	ND	ND	ND	.16	ND	3.9

1 - Analtical Results are presented as Parts Per Million (mg/kg, mg/l)

NA - Parameter not analyzed ND - Parameter not detected above the analytical detection limit

Shaded values indicate levels which exceed MDOH Any Use Soil Levels for residential sites.



NOTES

1. Plan adapted from field reconnaissance performed by a representative of Geotechnology, Inc. All site features are shown approximate only.
2. Contour Interval is 100 gammas/meter.
3. No data were collected along E10 from N60 to N160 due to proximity to fence.

LEGEND

- Negative Magnetic Gradient Contour
- Positive Magnetic Gradient Contour
- Chainlink Fence
- Metal Pipe Extending Above Ground
- General Area of Potential Buried Metal

Drawn By: WAH	Ck'd By:	App'vd By:
Date: 7–11–94	Date:	Date:

GEOTECHNOLOGY, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

Hubert Wheeler State School
St. Louis, Missouri

PLAN OF SITE AND MAGNETIC GRADIENT SURVEY

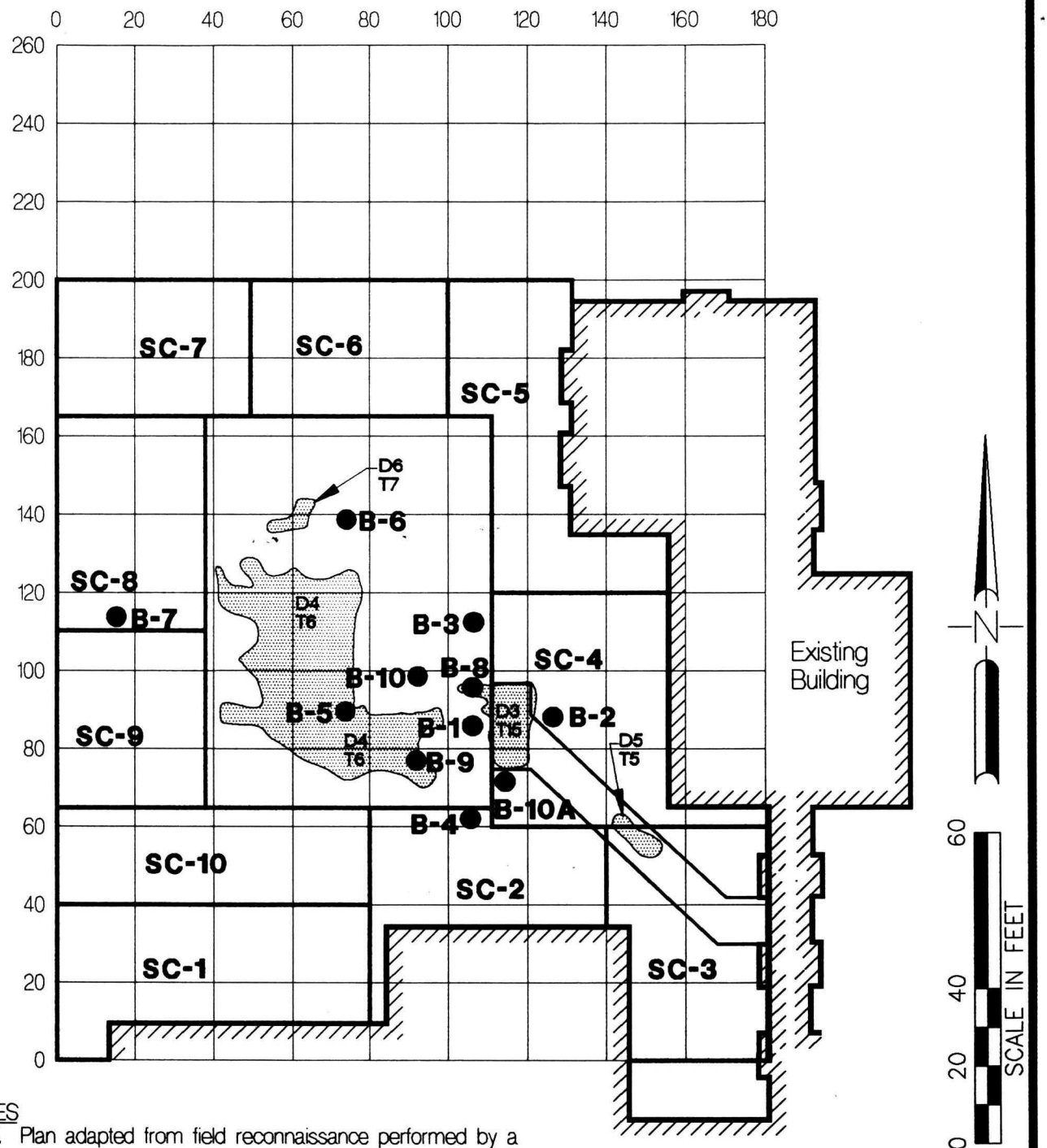
Project Number
2498.013120.05

PLATE 1

TABLE 3
ANALYTICAL RESULTS SUMMARY (Surface Soil Samples)

SEMI-VOLATILE ORGANICS DETECTED	MDOH ASL	BORINGS									
		SC-1	SC-2	SC-3	SC-4	SC-5	SC-6	SC-7	SC-8	SC-9	SC-10
total lead		99.1	124	64.1	57.9	51.0	48.1	27.2	65.8	70.4	117
2-methynaphthalene		ND	ND	0.039	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene		ND	ND	ND	ND	0.049	ND	ND	ND	ND	0.200
Acenaphthene		0.280	1.2	0.240	1.7	0.088	ND	ND	0.840	ND	0.630
Dibenzofuran		ND	0.590	0.130	0.870	0.040	ND	ND	0.390	ND	0.410
Flourene		0.270	1.3	0.240	1.9	0.076	ND	ND	0.760	ND	0.550
Phenanthrene		3.6	10.3	2.6	13.3	1.030	2.6	0.810	6.1	2.2	8.3
Anthracene		0.950	3.0	0.650	4.0	0.250	0.580	ND	1.5	0.500	2.2
Carbazole		0.41	1.6	0.280	2.2	0.120	0.260	ND	0.750	0.250	1.09
Di-n-butylphthalate		0.220	0.21	0.260	.250	0.240	0.400	0.780	0.490	0.460	0.260
Fluoranthene	2,300	5.5	12.0	3.0	15.0	1.6	3.7	1.4	7.2	3.4	11.0
Pyrene	1,700	4.8	10.5	2.7	13.0	1.5	2.8	1.2	5.9	2.9	10.7
Butylbenzylphthalate		ND	ND	0.091	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.44	2.6	5.6	1.4	7.1	0.800	1.4	0.550	3.1	1.4	5.2
Chrysene	0.44	2.7	5.5	1.5	7.2	0.850	1.5	0.640	3.4	1.6	5.9
bis(2-Ethylhexyl) phthalate		1.0	0.3	0.380	0.360	0.340	0.340	ND	0.470	0.300	0.390
Benzo(b)Fluoranthene	0.44	2.4	4.9	1.3	6.5	0.890	1.2	0.590	3.1	1.3	6.0
Benzo(k)Fluoranthene	0.44	1.3	3.6	0.980	3.4	0.550	1.1	0.400	2.0	1.2	4.7
Benzo(a)Pyrene	0.44	2.2	4.8	1.30	6.0	0.730	1.2	0.540	2.8	1.4	4.9
Indeno(1,2,3-cd)pyrene		1.4	2.8	0.70	3.1	0.380	0.950	0.410	2.1	1.07	2.3
Dibenzo(a,h)anthracene	0.44	0.380	1.05	0.230	1.2	0.099	0.240	ND	0.510	0.260	0.780
Benzo(g,h,i)perylene		1.3	2.4	0.610	2.5	0.340	0.930	0.410	2.0	1.030	1.9
Naphthalene		ND	ND	ND	0.20	ND	ND	ND	ND	ND	ND

1 - Analtical Results are presented as Parts Per Million (mg/kg)
ND - Parameter not detected above the analytical detection limit
Shaded values indicate levels which exceed MDOH Any Use Soil Levels for residential sites.



NOTES

1. Plan adapted from field reconnaissance performed by a representative of Geotechnology, Inc. All site features are shown approximate only.

2. Surface sampling areas and boring locations were established in the field with reference to existing site featurs and site grid and are shown approximate only.

LEGEND

SC-1 Surface Sampling Area

● Boring Location

D# T# Infrared Anomaly with Depth to Anomaly (D#) and and Thickness of Anomaly (T#)

Drawn By: WAH	Ck'd By:	App'vd By:
Date: 8-8-94	Date:	Date:

GEOTECHNOLOGY, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES
SAINT LOUIS • KANSAS CITY

Hubert Wheeler State School
St. Louis, Missouri

PLAN OF SITE, SAMPLING LOCATIONS AND INFRARED ANOMALIES

Project Number
2498.013120.05

PLATE 2